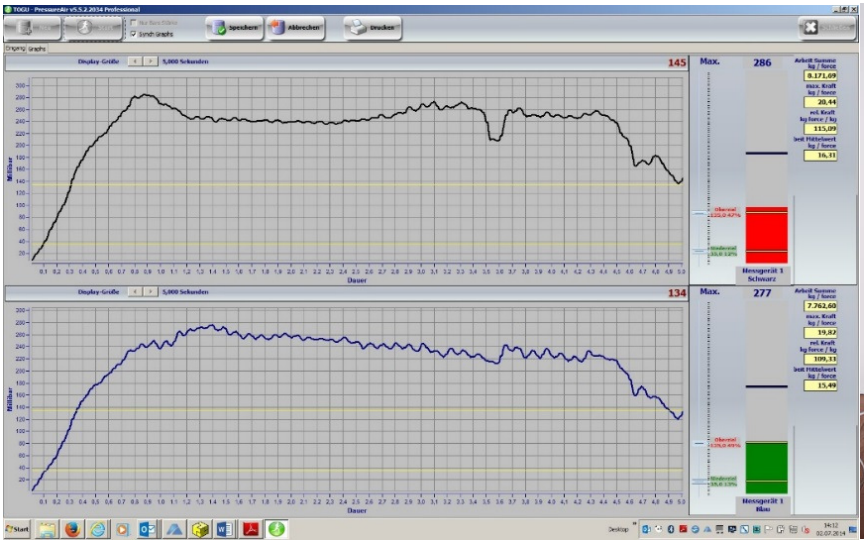
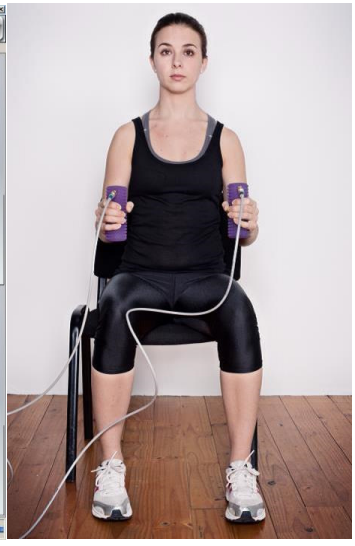
PAB Test Manual

Introduction

PAB® stands for Pressure Air Biofeedback and is a very easy to use system for muscular function diagnosis. In connection with chosen inflated **TOGU®** products it can evaluate and measure muscle performance.

The PAB® device measures the force, which a test person applies on an inflated TOGU product by measuring the air pressure inside. It is a dynamic strength measurement which is shown as a strength graph on the user's computer screen.
The duration of the test can be freely selected. This enables to test the maximum strength as well as fatigue performance of the muscles.





The duration of the tests can be chosen freely. Depending on the duration one can assess the maximal strength as well as the fatigue pattern of the muscles. The testing results can be saved and compared for each patient during the whole training or therapy period. The progress of training and therapy can thus be documented.

Tests for assessing the muscular function of various body parts are described below. This is not a conclusive compilation of all tests. PAB makes it possible to devise further testing procedures, just as it suites the need of the user.

Test Set up

You can test a patient as soon as you have installed the pab® programm and done all the necessary settings as described in the PAB Pro or PAB Basic User manual.

The pab® device must be connected via USB cable with the computer. At the same time it must be connected to a TOGU training device by the tube with the inflator needle.

The test instructions below explain for each standard test, which TOGU training device must be used.

These are the TOGU training devices:

TOGU Bodyroll Senso

TOGU Senso Balance Kissen

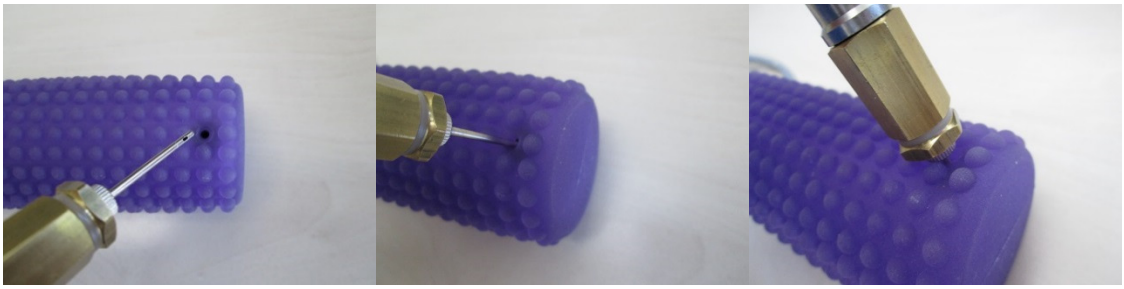
TOGU Throw Ring

TOGU Senso Ball

TOGU Dynair Ballkissen Senso

Important!

- **Moisten the inflator needle before you insert it into the needle valve of the TOGU training device.**
- **Carefully insert the inflator needle straight (not at an angle) into the needle valve.**
- **The inflator needle must fit tight, without touching the material opposite of the needle valve.**



Calibration before testing

The test results are influenced by the air pressure inside the inflated TOGU training device. In order to compare various tests the initial air pressure must always be the same. Therefore it is recommended to always calibrate with an air pressure of 0 mbar. This can easily be achieved by following the steps below:

1)

Moisten inflator needle and afterwards insert it with the tube into the needle valve.

2)

Push blue ring (release valve) downwards and pull out the tube. Leave open for ± 5 seconds for air to equilibrate/calibrate.

3)

Push tube back into needle attachment and pull on tube again to make sure tube is fitting tight into needle attachment. The calibration is done.

The calibration value of 0 mbar means, that the air pressure inside the TOGU training device is equal to the air pressure outside of the device.

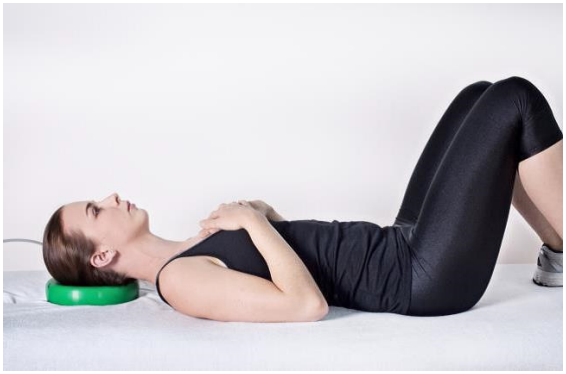
Neck

1 Neck Extension Test

Assesses strength of the neck muscle extensors

Equipment: pab® device, TOGU Senso Balance Kissen, small towel
Muscles tested: Splenius capitis and cervicis, Longissimus capitis, Semispinalis capitis and cervicis, Subocciptal muscles

Starting position



Lie on back (knees bend) with back of head on TOGU Senso Cushion (if necessary, small towel can be folded under head). Arms crossed over chest (clench teethslightly)

Note: If you test a person on a bed, place a thin book under the TOGU Senso Cushion for a more firm test

Movement description: Push head down on Senso Cushion
End position: Similar to starting position
Suggested Duration: 10 seconds hold
Calibration: 0 mbar. See Simple Calibration on last page.

Chest

2 Sit chest press test

Assesses the combined chest strength of both Right & Left Chest

Equipment: pab® device, TOGU Senso Ball
Muscles tested: Pectoralis major muscle group, Coracobrachialis, Deltoid anterior, Biceps brachii

Starting position

Sit straight up on chair, hold Touch ball between palms of hands in front of chest, ball does not touch chest. Elbows are lifted sideways.

Note: Try not to use fingers when doing press test.

Movement description: Compress ball with palms of hands
End position: Same as starting position
Suggested Duration: 10 seconds hold
Calibration: 0 mbar. See Simple Calibration on last page.

Shoulder Anterior Muscles

3 Empty can test

Assesses elevation strength of the Rotator Cuff and anterior shoulder muscles
Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Supraspinatus, Deltoid anterior & middle

Starting position

Sit on chair; lift straight arm in front to shoulder height; turn arm 30° outwards (palm faces downwards). Attach one side of strap around wrist and stand on a selected strap number (1, 2 or 3) on other strap for proper set up. Record numbers on straps for precise testing and re-testing.

Movement description: Pull upwards against strap
End position: Hand slightly higher than start position
Suggested Duration: 10 seconds hold per arm
Calibration: 0 mbar. See Simple Calibration on last page.

Shoulder posterior muscles

4 Shoulder extension test

Assesses extension-elevation strength of posterior shoulder and scapula muscles

Equipment: pab® device, TOGU
Muscles tested: Teres major, Latissimus dorsi, Deltoid posterior, Trapezius transversa, Deltoideus posterior, Trapezius, Rhomboideus major und minor

Starting position

Stand up straight, attach one side of strap around wrist (arm straight) and stand on a selected strap number (1, 2 or 3) on other strap. Palm of hand faces backwards. Hand pulls past buttocks. Tester can also stand on strap. Record numbers on straps for precise testing and re-testing.

Movement description: Pull backwards and up against strap
End position: Similar to starting position
Suggested Duration: 10 seconds hold per arm
Calibration: 0 mbar. See Simple Calibration on last page.

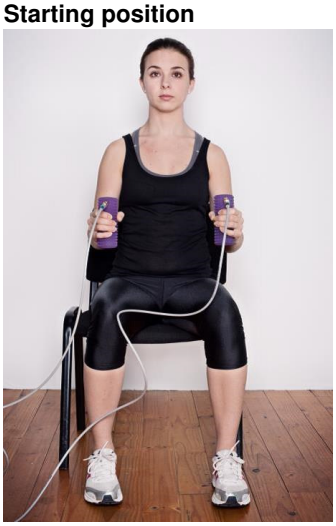
Hand

5 Hand Grip Test

Assesses hand grip strength

Equipment: pab® device, TOGU Bodyroll Senso
Muscles tested: Finger Flexion: Flexor digitorum profundus, Flexor digitorum superficialis, Dorsal and Palmar interossei, Flexor digiti minimi, Thumb Flexion: Flexor pollicus brevis, Flexor pollicus longus, Adductor pollicis

Starting position



Sit on chair, elbows bent to 90°, take two (2) Bodyroll Senso (Air Grips) in hands. Air Grips is in vertical position.

Note: You can use 1 or 2 Air grips to test grip strength.

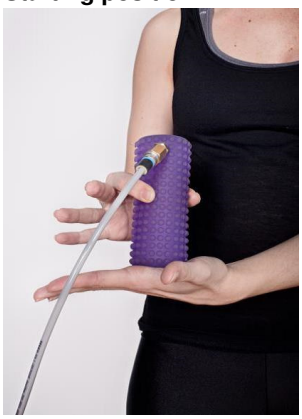
Movement description: Hand grip squeeze
End position: Same as starting position
Suggested Duration: 10 seconds hold per hand
Calibration: 0 mbar. See Simple Calibration on last page.

6 Finger Grip Test

Assesses individual finger grip strength

Equipment: pab® device, TOGU Bodyroll Senso
Muscles tested: Finger Flexion: Flexor digitorum profundus, Flexor digitorum superficialis, Dorsal and Palmar interossei, Flexor digiti minimi, Thumb Flexion: Flexor pollicus brevis, Flexor pollicus longus, Adductor pollicis

Starting position



Sit on chair, elbow bend to 90°, take Air Grip between index finger and thumb. Air Grip is in vertical position and gently rests on palm of other hand..

Note: Middle, ring and small fingers can be tested in the same way

Movement description: Finger grip squeeze
End position: Same as starting position
Suggested Duration: 10 seconds hold per finger
Calibration: 0 mbar. See Simple Calibration on last page.

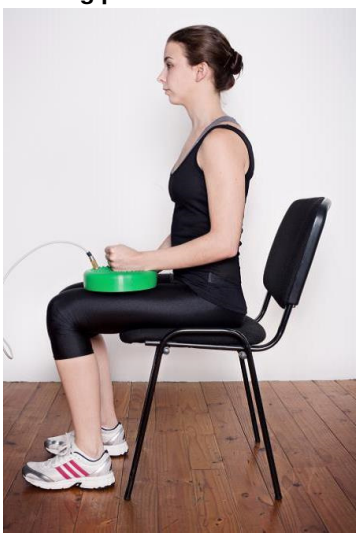
Arms

7 Tricepts Extensions Test

Assesses triceps extension strength

Equipment: pab® device, TOGU Senso Balance Kissen, small towel
Muscles tested: Triceps brachii, Anconeus

Starting position



Sit on chair, elbow bend to 90°. Place side of hand on top of TOGU Senso Cushion (thumb facing upwards). Other hand gently supports side of cushion.

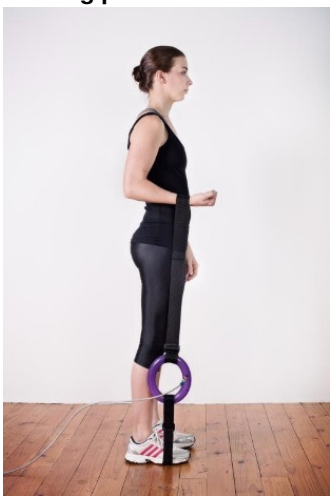
Movement description: Push downwards on Senso Cushion
End position: Same as starting position
Suggested Duration: 10 seconds hold per arm
Calibration: 0 mbar. See Simple Calibration on last page.

8 Biceps Curl Test

Assesses biceps curl strength

Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Biceps brachii, Brachialis

Starting position



Stand up straight. Elbow bend to 90° and tucked into side (palm point up). Attach one side of strap around wrist and stand on a selected strap number (1, 2 or 3) on other strap for proper set up. Record numbers on straps for precise testing and re-testing.

Movement description: Upwards pull against strap
End position: Hand slightly higher than starting position
Suggested Duration: 10 seconds hold per arm
Calibration: 0 mbar. See Simple Calibration on last page.

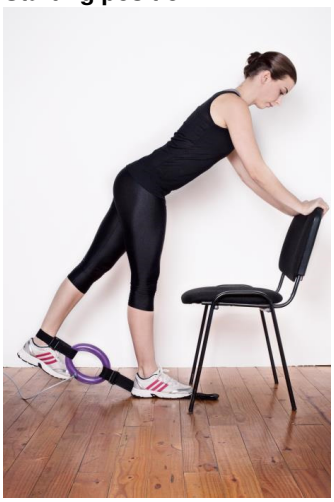
Hips

9 STANDING HIP EXTENSION TEST

Assesses the hip extensor strength of each hip

Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Gluteus maximus, Gluteus medius and minimus posterior part, Piriformis, Adductor magnus, Biceps femoris (long head), Semimembranosus, Semitendinosus.

Starting position



Stand and lean forward on chair/desk with both hands. Attach one side of strap around ankle and stand on strap number 1, 2 or 3 with other foot. A $\pm 45^0$ angle must be formed between legs (see photo). Record numbers on straps for precise testing and re-testing.

Movement description: Push back against strap, straight leg
End position: Same as starting position – hip extension position
Suggested Duration: 10 seconds hold per leg
Calibration: 0 mbar. See Simple Calibration on last page.

10 STANDING HIP ABDUCTION TEST

Assesses the hip abductor strength of each hip

Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Gluteus medius and minimus, Gluteus maximus (upper fibres), Tensor fasciae latae, Piriformis, Sartorius.

Starting position

Stand up straight, hands on wall (arms bend slightly), attach one side of strap around ankle and stand on a selected strap number 1, 2 or 3 on other strap with other foot for proper set up. A $\pm 45^0$ angle must be formed between legs (see photo). Record numbers on straps for precise testing and re-testing.

Movement description: Push sideway against strap, straight leg
End position: Same as starting position - hip abduction position
Suggested Duration: 10 seconds hold per leg
Calibration: 0 mbar. See Simple Calibration on last page.

Knee

11 KNEE EXTENSION TEST (CLOSE KINETIC CHAIN)

Assesses knee extension (Quadriceps) strength

Equipment: pab® device, TOGU Senso Ball
Muscles tested: Quadriceps femoris muscles

Starting position

Client sits on bed/floor, with one Touch ball under knee and foot pushing against other Touch ball, against tester. Client holds sides of bed. Air pressure is measured in Touch ball under the knee.

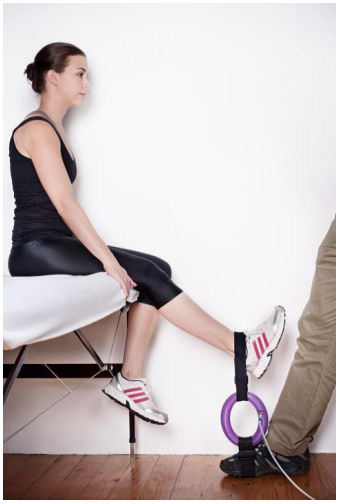
Movement description: Squeeze knee downwards on Touch ball while foot pushes against other Touch ball **against tester.** Tester firmly holds down ankle of client.
End position: Knee is straighter than starting position
Suggested Duration: 10 seconds hold per leg
Calibration: 0 mbar. See Simple Calibration on last page.

12 KNEE EXTENSION TEST (OPEN KINETIC CHAIN)

Assesses knee extension (Quadriceps) strength

Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Quadriceps femoris muscles

Starting position



Client sits on edge of bed, attach one side of strap around ankle, knee extended to $\pm 45^0$. Tester stands on a selected strap number (1, 2 or 3) on other strap for proper set up. Record numbers on straps for precise testing and re-testing..

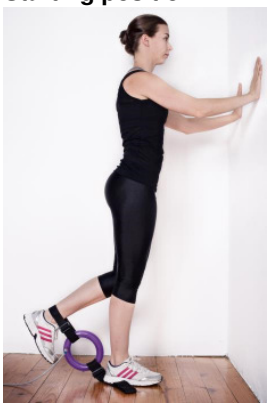
Movement description: Push up (knee extension) against strap at $\pm 45^0$ of knee flexion
End position: Knee is slightly straighter than starting position
Suggested Duration: 10 seconds hold per leg
Calibration: 0 mbar. See Simple Calibration on last page.

13 KNEE EXTENSION TEST (OPEN KINETIC CHAIN)

Assesses knee flexion (Hamstring) strength

Equipment: pab® device, TOGU Throwing ring with straps
Muscles tested: Biceps femoris, Semitendinosus, Gracilis, Semimembranosus, Sartorius, Popliteus, Gastrocnemius

Starting position



Standing up straight, with both hands on wall, attach one side of strap around ankle while knee is flexed at $\pm 45^0$. Stand on a selected strap number 1, 2 or 3 on other strap with other foot (heel) for proper set up. Record numbers on straps for precise testing and re-testing.

Movement description: Bend knee and pull up against strap
End position: Knee more bent than starting position
Suggested Duration: 10 seconds hold per leg
Calibration: 0 mbar. See Simple Calibration on last page